STATE OF VERMONT

PUBLIC SERVICE BOARD

Joint Petition of Green Mountain Power Corporation, Vermont Electric Cooperative, Inc. and Vermont Electric Power Company, Inc. for a Certificate of Public Good pursuant to 30 V.S.A. § 248, to construct up to a 63 MW wind electric generation facility and associated facilities on Lowell Mountain in Lowell, Vermont and the installation or upgrade of approximately 16.9 miles of transmission line and associated substations in Lowell, Westfield and Jay, Vermont	)	Docket No. _____

PREFILED TESTIMONY OF
CRAIG KIENY
ON BEHALF OF VERMONT ELECTRIC COOPERATIVE, INC.

May 21, 2010

Summary of Testimony

Mr. Kieny's testimony provides VEC's perspective on its power purchase agreement with Green Mountain Power and demonstrates that the PPA provides significant benefits to VEC. He also addresses three criteria of 30 V.S.A. Section 248 from VEC's perspective: (b)(2), Need; (b)(4), Economic Benefit and (b)(6), Consistency with Least Cost Integrated Plan.

PREFILED TESTIMONY OF CRAIG KIENY
ON BEHALF OF
VERMONT ELECTRIC COOPERATIVE, INC.

1. Q. Please state your name and your position.

A. My name is Craig Kieny, and I am Senior Power Resources Planner for Vermont Electric Cooperative, Inc. (VEC).

2. Q. What is your educational and professional background?

A. I received a Bachelor of Science Degree in Electrical Engineering from the University of Vermont in 1984. In 1988, I received a Masters of Business Administration, also from the University of Vermont. After receiving my MBA, I worked for the Burlington Electric Department (BED) for ten years. When I left BED in 1998, I was the Manager of Engineering, Planning and Rates.

3. Q. Have you previously testified before the Vermont Public Service Board?

A. Yes. I have testified before the Public Service Board (PSB) in numerous dockets on behalf of BED, VEC and Citizens Communications Company (Citizens).

4. Q. Please summarize your testimony.

A. Mr. Pughe has attached as an exhibit a Letter of Intent that includes a Term Sheet describing the basic terms of a proposed power purchase agreement (PPA) between GMP and VEC that relates to the proposed Kingdom Community Wind generation facility that is the

subject of this matter (the Project or the KCW Project). I will provide VEC's perspective on the PPA and demonstrate that the PPA provides significant benefits to VEC. I will also address three criteria of 30 V.S.A. Section 248 from VEC's perspective: (b)(2), Need; (b)(4), Economic Benefit; and (b)(6), Consistency with Least Cost Integrated Resource Plan.

5. Q. Does the proposed PPA Term Sheet provided by Mr. Pughe accurately describe the terms of your agreement?

A. Yes.

6. Q. Can you please summarize the key components of the proposed PPA??

A. In sum, GMP is the developer of the Project and will pay for all costs required to design the Project, receive all necessary permits and otherwise bring the Project on line. Once the Project is operating, VEC will become a "virtual owner" of a fixed percentage of the Project. The exact percentage is dependent upon the nameplate capacity as shown in Attachment A-1 of the PPA term sheet. The Project is expected to have a nameplate capacity of 50-63 MW, with VEC's share being 8 MW, or approximately 12.7% - 16.0%. My testimony is based on a 63 MW project size.

As a "virtual owner" VEC will receive all the benefits of owning its percentage share in the Project. These benefits include, but are not necessarily limited to, products in the ISO New England administered energy and capacity markets as well as Renewable Energy Certificates (RECs) in certain states in the Northeast.

Also as a "virtual owner," VEC will pay GMP for VEC's percentage share of all costs incurred by the Project on a monthly basis, regardless of the output of the Project. In addition, VEC will pay GMP a development risk premium equal to 2 times VEC's percentage share of the Development Costs (defined in the Term Sheet) of the Project, subject to a dollar cap.

7. Q. What analyses did you conduct to determine the benefits of the Project to VEC?

A. I began by reviewing the financial model prepared by GMP I reviewed the various assumptions and tested many of the formulas to verify that the logic in the spreadsheet worked properly. All assumptions seemed reasonable, and the formulas appear to work properly. I next added VEC's development risk premium fee and other cost items that VEC believes will be associated with the Project and unique to VEC. I also compared the net cost of the Project to various supply alternatives for both renewable and non-renewable projects and market price forecasts, and compared the annual output of the Project to VEC's energy and capacity needs.

8. Q. Please explain how the Project, including the associated power agreement will benefit VEC and its members?

A. The Project (including the proposed PPA) provides a number of benefits to VEC and its members. First, the Project results in a net economic benefit to VEC's members from a long-term perspective compared to other currently-available power supply alternatives including buying from the market under several high market price scenarios. These alternatives include a new a natural gas combined-cycle plant, new biomass facilities, solar projects and wind facilities

in New England and New York. Information regarding prices of these alternatives was gathered through (1) the RFP issued by CVPS, GMP and VEC, as mentioned by Doug Smith in his testimony; (2) an RFP issued by Vermont utilities in the evaluation of the Champlain Wind Link; and (3) discussions that I have had with a number of individual developers. The market price scenarios include those developed by La Capra Associates in the development of VEC's IRP as well as forecasts developed in-house by VEC.

Second, the Project will assist the state in meeting its January 1, 2013 SPEED goal, as well as the goal of serving 20% of Vermont's load with SPEED resources by 2017 as established by 30 V.S.A Section 8005. These are discussed further below.

Third, the Project provides a degree of cost stability to VEC's portfolio by acting as a hedge against (1) fossil fuel price volatility, (2) potential legislation designed to impose costs on carbon generation; and (3) Renewable Portfolio Standards VEC may be bound by in the future.

Fourth, the Project will also theoretically lower the Locational Marginal Price in New England as well as the Vermont Load Zone, and thus lower the cost of VEC's entire load in the ISO Settlement system.

Finally, because the Project is located in Vermont, the LMP at the generator node at which VEC will be credited with revenue from the Project in the ISO Settlement system should be more highly correlated to the Vermont Load Zone price at which load is settled than out-of-state

resources, thus providing VEC some protection against congestion and loss differentials between the Vermont Load Zone and its supply resources.

9. Q. What are the risks associated with purchasing the output of the Project on the terms set forth in the term sheet and what has VEC done to mitigate these risks?

A. There are several risks and VEC has taken steps to mitigate those it can influence. First, the economics of the Project are based in part on the re-sale value of the RECs to companies in other states in New England who must meet Renewable Portfolio Standards (RPS). If these states change their rules such that RECs associated with SPEED projects in Vermont are not eligible to satisfy RPS requirements in those states, the economics of the Project may be negatively impacted. To mitigate this risk, VEC is considering selling the rights to a portion of the RECs associated with the Project to a third party 1-3 years at time.

Second, since GMP is the developer of the project and is passing through its costs to VEC, VEC has little control over its overall costs to construct and operate the Project and is at risk to GMP's ability to maintain costs. VEC has minimized the risk of excessive development and construction costs by negotiating two different caps on the Development Premium.

As mentioned earlier, the Development Costs that will be used to determine VEC's Development Premium is subject to a dollar amount cap, as indicated in the Term Sheet. In addition, VEC's Development Premium will be subject to a per MW cost cap if the project is constructed with a

nameplate capacity of less than 40 MW. Attachment A-3 of the PPA provides examples of the calculation at different levels of Development Costs and nameplate capacity of the Project.

In addition, GMP has agreed to work with VEC to prepare and approve a budget for the transmission upgrade included as part of the Project; the parties have agreed to work together to minimize costs; and material deviations from the agreed-upon budget require VEC approval. See JOA term sheet.

Third, the actual output of the plant is uncertain both on an annual basis and on an hourly basis due to the intermittent nature of the wind. This causes uncertainty regarding the value of power in the ISO settlement system and the per unit cost of the Project. Because VEC's costs are based on GMP's actual costs and not the output of the project, if the annual capacity factor is lower than assumed in the financial analysis, the per unit cost will increase, making the Project appear less favorable compared to other alternatives whose capacity factors are more certain. VEC has not taken steps to mitigate these risks.

Section 248(b)(2) – Need

10. Q. Please explain how the purchase satisfies Section 248 (b)(2) which states that the purchase is "is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy-efficiency and load management

measures, including but not limited to those developed pursuant to the provisions of subsection 209(d), section 218c, and subsection 218(b) of this title;"

A. VEC needs additional power resources to meet its power supply needs. At present, VEC has sufficient committed resources to cover and/or hedge approximately 95% of its projected annual energy requirements for 2010 and 2011. The hedged percentage decreases to approximately 50% by 2013 with the expiration of a contract with Entergy for the purchase of power from Vermont Yankee, the expiration of Schedules C-1 and C-2 of the Hydro-Quebec Joint Owners contract, and the expiration of several VEPPI contracts. VEC's hedged percentage (at the time of the writing of this testimony) decreases again to 20% by 2015 with the expiration of various short-term contracts.

Exh. Pet. Kieny-1 provides a comparison of VEC's projected need against its currently committed resources and shows a significant shortfall beginning in 2013, which is when the Project is scheduled to come on line. The load forecast used to estimate VEC's needs assumes the same base-case DSM implementation in VEC's service territory by Efficiency Vermont as was used in the development of VEC's IRP and is shown in the exhibit.

It should be noted that VEC has entered two contracts with First Wind to purchase power from the wind project First Wind hopes to develop in Sheffield, VT. The first contract is for 10 MW at fixed prices for 10 years from the commercial operation date. The second contract is for 10 MW at a discount to the Real-Time spot market price for 10 years from the commercial operation date, and 20 MW at a discount to the Real-Time spot market price for years 11-20 after

the commercial operation date. The output from the fixed price contract has been included in the hedged percentages discussed earlier. The commercial operation date for the Sheffield project is uncertain at this time due to the appeal of the project's Storm Water Runoff Permit. For planning purposes VEC is assuming a commercial operation date of July 1, 2011.

Should the First Wind project not come on line the hedged percentages discussed above will decrease by approximately 3% in 2011 and 6% per year thereafter, depending on load growth. VEC needs additional power in the future and the Project provides a cost-effective, locally-sourced resource.

VEC will also need the Project to meet its share of the statewide goal of SPEED resources for 2017. 30 V.S.A. Section 8005 also sets a statewide goal of 20% of 2017 load being served by SPEED qualifying resources. VEC share of this requirement is projected to be approximately 90,000 MWHs. With the combined output from the existing farm methane projects, the Standard Offer contracts, the First Wind – Sheffield project and the KCW Project, VEC will have approximately 91,250 MWH of SPEED qualifying resources in 2017 (assuming the wind projects achieve their projected capacity factors), thus allowing VEC to meet its share of the states 20% goal. Should the KCW Project not come on line, VEC will need to purchase approximately 17,750 MWHs from other SPEED qualifying resources, which may be more expensive.

Finally, VEC may need the Project to meet its share of Vermont's SPEED goals as defined by 30 V.S.A. Section 8005. In 2013 VEC's projected share of the state's SPEED goal ("SPEED requirement") is in a range with a lower bound of approximately 22,937,000 kWh and an upper bound of approximately 45,873,000 kWh. VEC is currently purchasing power from some facilities that qualify as SPEED resources and is in discussion with several developers of in-state renewable energy projects that, if they come on line, will also qualify as SPEED resources. Below is a table of the various projects that do/will qualify as SPEED resources and that VEC is either purchasing from or may purchase from.

Project	Estimated Annual MWHs	Status
Existing Farm Methane	4,528	On-Line
Standard Offer Purchases	15,176	Proposed
First Wind - Sheffield	52,560	Proposed
Kingdom Community Wind	18,021	Proposed

VEC currently has approximately 19.8% of its minimum and 9.9% of its maximum SPEED requirements fulfilled. Purchases through the proposed Standard Offer contracts could allow VEC to fulfill up to 85.9% of its minimum requirement and 42.9% of its maximum requirement. Should the First Wind project come on line VEC will meet its maximum SPEED requirement regardless of the amount purchased through the Standard Offer contracts.

However, if the First Wind project does not come on line VEC will need approximately 3,200 MWHs from SPEED qualifying resources to meet its minimum SPEED requirement and 26,500 MWHs to meet its maximum projected SPEED requirement. Thus, should the First Wind project not come on line, the KCW Project can help meet VEC's requirement.

Section 248(b)(4) – Economic Benefit

11. Q. How will the Project benefit the State and its residents, especially VEC members?

A. Because GMP is the developer of the Project, I will rely on the testimony of its witnesses to address the benefits to the State and its ratepayers. Instead, I will address the benefits to VEC's members.

Assuming it operates at the capacity factor projected in the model, the Project is expected to have an average annual cost under Alternative 1 described by Mr. Kvedar of $101/MWH over the life of the Project and $107/MWH for Alternative 2, when VEC specific items are taken into account. This is considerably less expensive than the most cost-effective instate biomass, solar and wind projects VEC has investigated. Even compared to a natural gas combined cycle plant, the Project's average cost is cost-effective compared to the average cost of approximately $119/MWH for a natural gas combined cycle plant over the same time period when adjusting to the Irasburg node and for a unit contingent project. Although in the first five years of the Project's operation it is expected to be considerably more expensive than a new natural gas combined cycle plant, the Project is expected to become less expensive by year seven.

If VEC is able to sell the RECs from the project it would be even more cost-effective. The average net $/MWH of the project under Alternative 1 is expected to be approximately $97/MWH under a low-to-moderate price scenario for RECs and approximately $71/MWH if the REC value remains at $30.00/MWH in nominal dollars.

In addition to these quantitative benefits to VEC's members, there is also the qualitative benefit of increased cost stability discussed in Q & A 8 above resulting from the fact that there is no fuel cost associated with the generation of the energy.

Section 248(b)(6) – Consistency with Least Cost Integrated Resource Plan

12. Q. Is the Project consistent with VEC's least cost Integrated Resource Plan?

A. The Board approved the Power Supply portion of the IRP on October 27, 2009.[1] VEC's IRP generally discusses wind as a renewable option and notes that there would likely be opportunities to pursue this resource. VEC IRP at 5-5. The PPA is consistent with this goal and will allow this new renewable resource to provide energy to VEC's system.

Specifically, VEC's IRP states that "[r]enewables may be more economical than fossil fuel based generation and market purchases because: (a) the fuel costs do not escalate at the same rate as natural gas; and (b) renewables do not have imbedded in them the cost impact of carbon allowance regulations that are assumed in the natural gas based generation and market purchases." VEC 2007 IRP at 7-8.

VEC's IRP also states that

> "[t]he results in this analysis are based on assumptions that the cost of renewables are related to the actual cost of the fuel. In cases of direct ownership or contracts based on a pass through of energy costs, that assumption may be attainable. However, in the case of a fixed price contract, some developers could price their project based on the forward

[1] *Investigation into VEC's 2008 IRP*, Dkt. No. 7449 (Vt. Pub. Serv. Bd., July 31, 2009).

market of power in New England; in this case the economic value of the project may not be as large as this analysis suggests."

VEC 2007 IRP at 7-9.

The "virtual ownership" structure of the KCW Project PPA allows VEC to achieve the benefits suggested by this conclusion.

Finally, the Supply Resource Action Plan on page 11-2 of VEC's IRP concludes in part that:

> As determined in this IRP study, VEC can possibly meet its object of stable rates and lessened environmental impact by minimizing purchases from fossil or nuclear facilities through long term contracting or ownership of renewable based generation. In order to secure contracts with or ownership of renewable energy projects, VEC proposes to take the following actions:
>
> - Research and evaluate wind generation projects for inclusion in the VEC resource mix.

VEC IRP at 11-2.

Thus, the agreement with GMP is consistent with VEC's IRP.

13. Q. Does this conclude your testimony?

A. Yes, it does.